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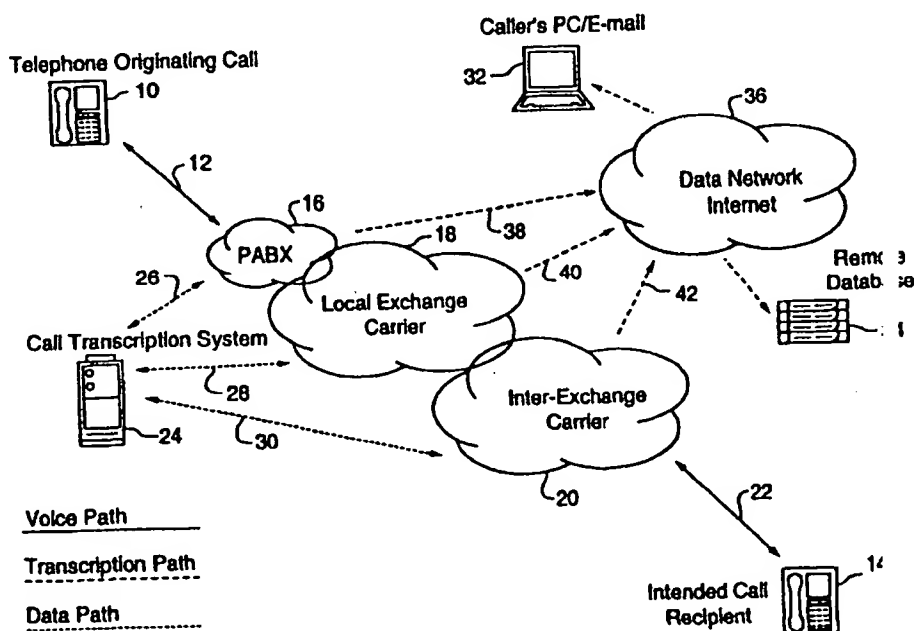
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(21) International Application Number: PCT/CA98/00172 (22) International Filing Date: 4 March 1998 (04.03.98) (30) Priority Data: 2,199,312 6 March 1997 (06.03.97) CA (71) Applicant: ALPHANET TELECOM INC. [CA/CA]; 4th floor, 55 St. Clair Avenue West, Toronto, Ontario M4V 2Y7 (CA). (72) Inventor: REICHMANN, Michael; 4th floor, 55 St. Clair Avenue West, Toronto, Ontario M4V 2Y7 (CA). (74) Agents: HALL, S., Warren et al.; Suite 301, 133 Richmond Street West, Toronto, Ontario M5H 2L7 (CA).		(81) Designated States: AL, AM, AT, AU, Z, BA, BB, BG, BR, BY, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, I, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YI, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, I.U. MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG Published With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.	

(54) Title: TELEPHONE CALL TRANSCRIPTION WITH ELECTRONIC DELIVERY



(57) Abstract

The present invention provides for a telephone call transcription system having a connection arrangement connecting the telephone call transcription system to a telephone system for monitoring telephone communications. The telephone call transcription system includes a recording arrangement for providing a digital record of the telephone communication and a transmitting arrangement associated with the recording arrangement connected to a data network for transmitting the record of the telephone communication to an electronic address accessible via the data network or data base retrieval system.

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TITLE: TELEPHONE CALL TRANSCRIPTION WITH ELECTRONIC
DELIVERY

5 FIELD OF THE INVENTION

The present invention is directed to an apparatus and a method for transcribing telephone calls as a digital audio file, and forwarding the digital audio file electronically to a pre-selected address.

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BACKGROUND OF THE INVENTION

There are many instances in which persons may desire to record telephone calls. For example, the use of telephone conferencing in business discussions is increasing, and it would be advantageous to have a transcription of such conference calls for future reference. It may also be possible that copies of transcriptions of telephone calls be provided to third parties. It is known to record telephone calls using an audio recorder attached to the telephone line. While a transcription of the call could be created, storage, filing and subsequent retrieval of the transcription was extremely difficult. In addition, the ability to forward copies of the transcribed call to others is awkward, if not at times, impossible.

With the advent of computer telephony equipment and software, it may be possible for a user utilizing such computer telephony equipment to record the telephone conversation being processed by the equipment and software. While such a situation may be possible, it requires that any telephone call which is desired to be transcribed must be either originated or received using the computer telephony equipment. It is not possible to record telephone calls which do not use such equipment.

Personal computers and electronic mail systems provide a highly efficient means of storing and

distributing digital information. Many forms of data, including text, audio and images may be digitally stored on a PC. Similarly, E-mail systems provide a ubiquitous interconnective means of distributing these various forms of data. In particular, the Internet now provides an almost seamless interconnection of both private and public data messaging systems worldwide. It would be advantageous to be able to record and store telephone conversations in a digital format when desired.

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SUMMARY OF THE INVENTION

The present invention provides for a telephone call transcription system comprising a connection arrangement connecting the telephone call transcription system to a telephone system for monitoring telephone communications. The telephone call transcription system includes a recording arrangement for providing a digital record of the telephone communication and a transmitting arrangement associated with the recording arrangement connected to a data network for transmitting the record of the telephone communication to an electronic address accessible via the data network or data base retrieval system.

In an aspect of the invention there is provided a telephone call transcription system in combination with the publicly switched telephone system. The telephone transcription system is a user selectable caller service which provides a digital recording of a telephone communication of the user when the calling service is selected. The transcription system comprises an activation arrangement for initiating the transcription service and identifying the user, a digital recording arrangement connected to the telephone system for producing a digital record of the call, a reference arrangement for determining an electronic address to which the digital record is to be transmitted using a data network and a transmitting arrangement associated with a recording arrangement and

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connected to the data network for transmitting the digital record of the telephone communication to the electronic address accessible via the data network.

5 BRIEF DESCRIPTION OF THE DRAWINGS

Preferred embodiments of the present invention are illustrated in the drawings attached hereto in which:

Figure 1 is a schematic view of a first preferred embodiment of the telephone call transcription system of
10 the present invention;

Figure 2 is a schematic view of a second preferred embodiment of the telephone call transcription system of the present invention;

Figure 4 is view of a typical page of the web
15 server of Figure 2 as viewed by a user; and

Figure 3 is a view of a typical email message transmitted by the system of Figure 1 or 2.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

20 Figure 1 illustrates in schematic view a preferred embodiment of the telephone call transcription system of the present invention. As shown in Figure 1, when a user desires to originate a call from a telephone originating system 10, he establishes a voice path 12 to an intended
25 recipient 14. Depending upon the location of the user originating the call this voice path may pass through a PABX 16 to a local exchange carrier 18 and if the call is a long distance telephone call, through an inter-exchange carrier 20. The routing and handling of the call through
30 this telephone system is as is common in day to day operation of telephone systems. From the PABX 16, local exchange carrier 18, or inter-exchange carrier 20, as the case may be, the telephone call is routed through a final voice path 22 to the intended call recipient 14. It will
35 be immediately appreciated that for those users directly connected to the local exchange carrier 18 the telephone call will not go through a PABX 16. In addition, for local

exchange calls, the inter-exchange carrier 20 is not utilized.

5 The telephone call transcription system 24 of the present invention is connected to the telephone system described above in a manner to permit the transcription system to monitor and record telephone communication passing along the voice paths as described above. Depending upon the arrangement of the telephone system to which the user's telephone set 10 is connected, the
10 telephone transcription system 24 may be connected anywhere along the potential voice path for telephone communication. Thus, for those locations in which the users' telephone sets 10 are connected to a PABX 16 the telephone transcription system 24 may also be connected to such PABX
15 16 via a transcription path 26. Alternatively, the telephone transcription system 24 may be connected to a local exchange carrier 18 via transcription path 28 or to the inter-exchange carrier 20 via transcription path 30.
20 The particular connection arrangement 26, 28 or 30 utilized depends upon the telephone system arrangement to which the telephone set 10 is connected as well as to the user's telephone call transcription needs or desires.

25 After the telephone call is transcribed in a manner as will be explained below, the transcribed call is forwarded electronically to a desired or pre-determined location. Typically, such desired or pre-determined location will be an E-mail address 32 or a remote database
30 34. In both of these situations, the transcribed call can be retrieved by the user when and as desired. In order to forward the transcribed call electronically, the telephone transcription system 24 is connected to a means for electronically transferring the transcribed call to the
35 desired location. For example, as shown in Figure 1, the telephone transcription system is connected to a data network 36 such as the Internet which enables the transcribed call to be transferred to the desired or pre-

determined E-mail address 32 or remote database 34.
Depending upon the particular setup, the connection of the
telephone transcription system 24 to the data network 30
may be through the PABX 16 along a data path 38, or through
5 the local exchange carrier 18 along data path 40, or
through the inter-exchange carrier along data path 42.

The operation of the telephone transcription system
of the present invention will now be described. When a
10 user originates or receives a telephone call which is to be
recorded, the telephone transcription system 24, which has
been monitoring the telephone line commences to record the
telephone call as a digital audio file. During the
recording, if desired or necessary, a recording
15 notification tone may be generated by the system to notify
all users that the call is being recorded. Alternatively,
the recording notification tones may be manually initiated
by the user.

20 The call can be recorded in any of the commonly
used audio file formats such as a .WAV, an .AIF, a .SND, or
other standard formats. If the call is recorded in a
standard format, readily available software systems may be
utilized for playback and manipulation. Alternatively the
25 sound could be recorded in a proprietary format which has
been optimized to provide smaller file sizes for the same
length of recording as the standard formats. If the call
is recorded in a proprietary format, special software
systems would be provided to enable playback, manipulation,
30 compression, reforwarding and archiving.

In order to reduce the transcribed call file size,
low sampling rates and compression of the recorded call may
be used. By using a low sampling rate, the size of the
35 file is proportionately reduced. While many sound files
for use in multimedia applications are currently recorded
in 16-bit stereo at a sampling rate of 44 kHz, such
recording levels require up to 11 MB per minute of sound.

For the recording of speech for the telephone transcription system of the present invention, sampling rates of 11 kHz or less are generally adequate, with a sampling rate of 6.8 kHz being preferred.

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In addition, compression of the recorded sound using standard or proprietary compression techniques may be employed. Two commonly utilized compression techniques commonly used are ADPCM which generally reduces file size by about 50% and MPEG which can achieve up to 12:1 compression. As a significant percentage of telephone conversations is silence, a proprietary compression technique may be used either alone or in combination with one of the other compression techniques to further reduce the size of the transcribed telephone call file. It has been found that by using a combination of low sampling and a compression technique, file sizes of about 40-50 kB per minute of sound can be achieved while retaining the quality of the recorded sound.

20

Once the telephone conversation has been completed, the telephone transcription system 24 electronically transfers the file containing the transcribed telephone call to the desired or pre-determined location. After the file has been transmitted, the file is preferably erased from the telephone transcription system. The reason for immediately erasing the file is mainly for security reasons however by immediately erasing the file, the amount of storage space required by the system is also optimized. As a number of recorded telephone calls may involve confidential information, it is desirable to maintain the confidentiality by erasing the file from the telephone transcription system.

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As illustrated in Figure 1, the pre-determined or desired location could be an E-mail address 32, either the user's own E-mail address or another pre-determined or desired E-mail address. The telephone transcription system

could package the recorded telephone conversation file in an E-mail message and send the file as an attachment to that message. As shown in Figure 4, the system may also provide related information such as the time of day, date and length of the call, the telephone number and caller ID of the originating and or called party or parties, country or city of origin or termination and voice path utilized for the telephone call. For purposes of increased security, the attachment and even the entire E-mail message may be encrypted. As the original file is deleted by the telephone transcription system, bounced E-mail messages could also be automatically deleted or they could be redirected to another location, such as a remote database or an alternate E-mail address.

15

The desired or pre-determined location may also be a remote database 34 maintained on a computer system accessible by the user. The database 34 may be accessed by the user using a data or a voice connection. For a data connection, the user would connect to the database either by direct dial-up connection or by accessing the database through a data network such as the Internet. Once connected to the database, the user may listen to the files on-line or may download, archive or forward the file or a copy to a third party. Similar to the situation with E-mail, the message may also be packaged with other information such as the time of day, date and length of the call, the telephone number and caller ID of the originating and or called party or parties, country or city of origin or termination and voice path utilized for the telephone call, all accessible from the database access.

30

For a voice connection, the user could access the database by an interactive telephony session by keying in responses to queries using the keypad of a standard telephone set. In this way, the files could be listened to, archived or forwarded to another address. For voice connections, additional information could be appended or

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prepended to the telephone call file in the form of synthesized or pre-recorded messages. Alternatively, the additional information could be in the form of text as in the case of E-mail or data access and a text to voice software system could be used for playback of the additional information.

The telephone transcription system of the present invention may be configured to record all calls, to record only calls matching a certain criteria or only to record calls in response to the user initiating the recording of the call. If the system is configured to record calls matching a specified criteria, the criteria could be based on the originating and or receiving caller. For example, a user could configure the system to record all calls originating from or received by their telephone which would be identified by a unique number. Alternatively, the system could be configured to only record calls which either originate from or are received by their telephone. A third possibility would be to only record calls in which a specified telephone number or numbers are one of the parties involved in the call. Thus the system could be instructed to record all calls placed to or received from a specified third parties telephone number or ID.

If the system is configured to record calls only when specifically instructed to do so by the user, the instructions could be transmitted to the system in many ways. For example, the user may be required to enter a special code and or a Personal Identification Number to initiate the recording. Such codes or PIN may be entered by using the telephone keypad to enter the digits in the form of DTMF as part of a recording initiating process which preferably takes place prior to initiation of the call. Alternatively, such instructions could be part of a credit card, telephone calling card or country-direct call. It may be desirable or necessary in some circumstances for the user to dial a specified number to enter this

information as an intermediate step prior to placing the telephone call. Thus a user would first dial an access number for the transcription telephone system, initiate the transcription in a specified manner and then place the telephone call which is desired to be recorded. Such a system could be especially of benefit if the user were placing calls from a pay phone or other telephone which is not the user's own telephone.

10 The system may also be configured to enable recording on the fly, i.e. recording of a call after the call has been initiated. For example, if the user has already started a call and desires to record the call, the user could instruct the telephone transcription system to commence recording by entry of a specified code such as the entry of special digits using the telephone keypad.

 The telephone transcription system of the present invention may also be configured to enable the user to cancel the recording during the conversation or to erase the recording at the termination of the call. These features may be accessed by entry of special digits on the telephone keypad or may utilize a data link to the telephone transcription system to send such instructions. If during the call, the user desires to cancel the recording, they could press a particular key or combination on their telephone set to cancel the recording. Similarly, if at the end of the call, the user desires to erase the recording of the call, they could access the telephone transcription system using their telephone and instruct the system to erase the call. In order to provide the user with sufficient time to do so, a delay could be built into the system between the completion of the recording of the call and the forwarding of the transcribed telephone call file to the pre-determined or desired location. Typically, this delay would be on the order of 5 to 30 minutes.

The configuration of the telephone transcription service may be user modifiable. The user may be able to access account information and parameters to establish the customization of the system to their preferences. For
5 example, using an interactive telephony system, the user could modify information and parameters by responding to prompts either vocally using voice recognition software or by generation of DTMF by pressing selected keys or combinations. Alternatively, as shown in Figures 2 and 4,
10 the user could utilize their access an on-line service such as for example a server accessible via the World Wide Web to modify or customize the system to their requirements. Such information and parameters as security and encryption access codes, recording parameters and customer profile
15 data including preferred E-mail address or addresses or delivery may also be accessed and configured or modified.

The telephone call transcription system, as shown if Figure 2, may also be configured to provide real time
20 control and modification by the user via an on-line service such as for example a server accessible via the World Wide Web. The user could establish a connection to their account provided through the web page of the transcription service provider. An example of such a web page is found
25 in Figure 4. The user, by accessing the web page, would then be able to control the transcription of telephone calls as they are received, choosing to turn on or off transcription at the beginning of or during the conversation. The user could also perform other functions
30 such as the erasure or deletion of the transcribed call or redirection of the transcribed call or copies thereof to alternate electronic addresses. If desired the user could also utilize the connection to the web page account to add further information to the transcribed call prior to its
35 transmission. Such further information may include further notes in the form of text or voice or other such information. The user would also be able to use the connection to modify system generated messages which are

appended to the digital file as described above. Such modifications could add to or delete from the system generated messages or could specify which system generated messages are to be appended to the file. The user could be presented with a list of options or messages which could be appended to the file and could select from the list of options or messages which of those they wished to append to the files. It will be apparent to those skilled in the art that the active connection to the account could also be used in other ways to optimize the use of the transcription system by the user.

Although various preferred embodiments of the present invention have been described herein in detail, it will be appreciated by those skilled in the art that variations may be made thereto without departing from the spirit of the invention or the scope of the appended claims.

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A telephone call transcription system comprising
a connection arrangement connecting said system to
a telephone system for monitoring telephone communications,
a recording arrangement for providing a digital
record of a monitored telephone communication,
a transmitting arrangement associated with said
recording arrangement and connected to a data network for
transmitting the record of the telephone communication to
an electronic address accessible via the data network.
2. A telephone call transcription system according to
claim 1 wherein said electronic address is an email address
or a remote database.
3. A telephone call transcription system according to
claim 2 wherein the recording arrangement records all
monitored telephone communications.
4. A telephone call transcription system according to
claim 2 further including a control arrangement for
controlling one or more of the recording arrangement and
transmitting arrangement.
5. A telephone call transcription system according to
claim 4 wherein the control arrangement controls the
recording arrangement for enabling recording of only those
telephone communications matching selected criteria.
6. A telephone call transcription system according to
claim 5 wherein the control arrangement includes a user
access means for allowing a user to enable recording of
selected telephone communications.

7. A telephone call transcription system according to claim 6 wherein the user access means is provided by an on-line service.

8. A telephone call transcription system according to claim 7 wherein the on-line service is provided by a server on the Internet.

9. A telephone call transcription system according to claim 8 wherein the controls means allows a user to control the recording arrangement to either terminate recording of a telephone communication during a call or to erase the recorded telephone communication prior to transmission by the transmitting arrangement.

10. A telephone call transcription system according to claim 4 wherein the control arrangement controls the transmitting arrangement for controlling transmission of telephone communications matching selected criteria.

11. A telephone call transcription system according to claim 10 wherein the control arrangement includes a user access means for allowing a user to control transmission of selected telephone communications.

12. A telephone call transcription system according to claim 11 wherein the user access means is provided by an on-line service.

13. A telephone call transcription system according to claim 12 wherein the on-line service is provided by a server on the Internet.

14. A telephone call transcription system according to claim 13 wherein said control means includes a look up database which maintains user instruction information containing the destination address to which the digital record is to be transmitted.

15. A telephone call transcription system according to claim 14 wherein said look-up database also maintains user account information and user selectable parameters for operation of the transcription system.

16. A telephone call transcription system according to claim 1 wherein said transcription system includes a message processing means for appending system generated messages to the record of the telephone communication for transmission by the transmitting arrangement.

17. A telephone call transcription system according to claim 16 wherein the system generated messages include information on the originating and receiving telephone numbers of the telephone communication, and date time and length of the telephone communication.

18. A telephone call transcription system according to claim 1 wherein the telephone call transcription system further includes a compression means for compressing the digital record of the telephone communication prior to transmission by the transmitting means.

19. A telephone call transcription system according to claim 1 wherein the system further includes an encryption means for encrypting the digital record of the telephone communication prior to transmission by the transmitting means.

20. A telephone call transcription system in combination with a publicly switched telephone system, said telephone transcription system being a user selected calling service which provides a digital recording of a telephone communication of the user when said calling service is selected, said transcription system comprising
an activation detector for initiating the transcription service and identifying the user,

a digital recording arrangement connected to said telephone system for producing a digital record of the call,

an arrangement for determining an electronic address to which the digital record is to be transmitted using a data network, and

a transmitting arrangement associated with said recording arrangement and connected to the data network for transmitting the digital record of the telephone communication to the electronic address accessible via the data network.

21. A telephone call transcription system as claimed in claim 20 wherein said call transcription service is directly associated with one of a PABX, a Local Exchange Carrier or a Inter-Exchange Carrier.

22. A telephone call transcription system according to claim 21 wherein said electronic address is an email address or a remote database.

23. A telephone call transcription system according to claim 22 wherein said activation detector includes a control arrangement for controlling one or more of the recording arrangement and transmitting arrangement.

24. A telephone call transcription system according to claim 23 wherein access to the control arrangement is through an on-line service.

25. A telephone call transcription system according to claim 24 wherein the on-line service is provided by a server on the Internet.

26. A telephone call transcription system according to claim 25 wherein the controls arrangement controls the recording arrangement to either terminate recording of a telephone communication during a call or to erase the

recorded telephone communication prior to transmission by the transmitting arrangement.

27. A telephone call transcription system according to claim 23 wherein the control arrangement controls the transmitting arrangement for controlling transmission of telephone communications matching selected criteria.

28. A telephone call transcription system according to claim 27 wherein access to the control arrangement is through an on-line service.

29. A telephone call transcription system according to claim 28 wherein the on-line service is provided by a server on the Internet.

30. A telephone call transcription system according to claim 29 wherein said control arrangement includes a look up database which maintains user instruction information containing the electronic address to which the digital record is to be transmitted.

31. A telephone call transcription system according to claim 30 wherein said look-up database also maintains user account information and user selectable parameters for operation of the transcription system.

32. A telephone call transcription system according to claim 31 wherein said transcription system includes a message processing means for appending system generated messages to the record of the telephone communication for transmission by the transmitting arrangement.

33. A telephone call transcription system according to claim 32 wherein the system generated messages include information on the originating and receiving telephone numbers of the telephone communication, and date time and length of the telephone communication.

34. A telephone call transcription system according to claim 33 wherein the telephone call transcription system further includes a compression means for compressing the digital record of the telephone communication prior to transmission by the transmitting means.

35. A telephone call transcription system according to claim 34 wherein the system further includes an encrypt on means for encrypting the digital record of the telephone communication prior to transmission by the transmitting means.

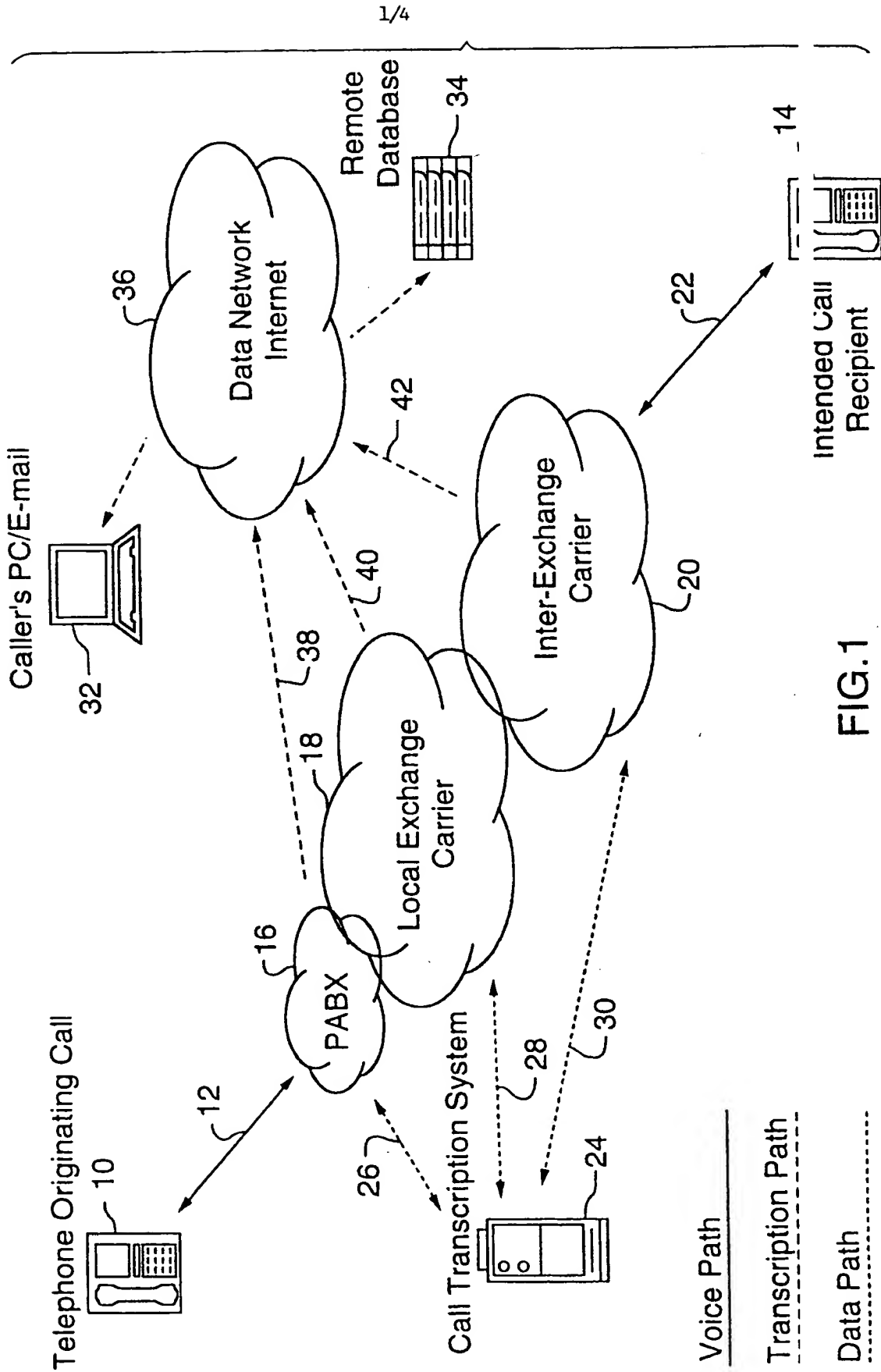


FIG.1

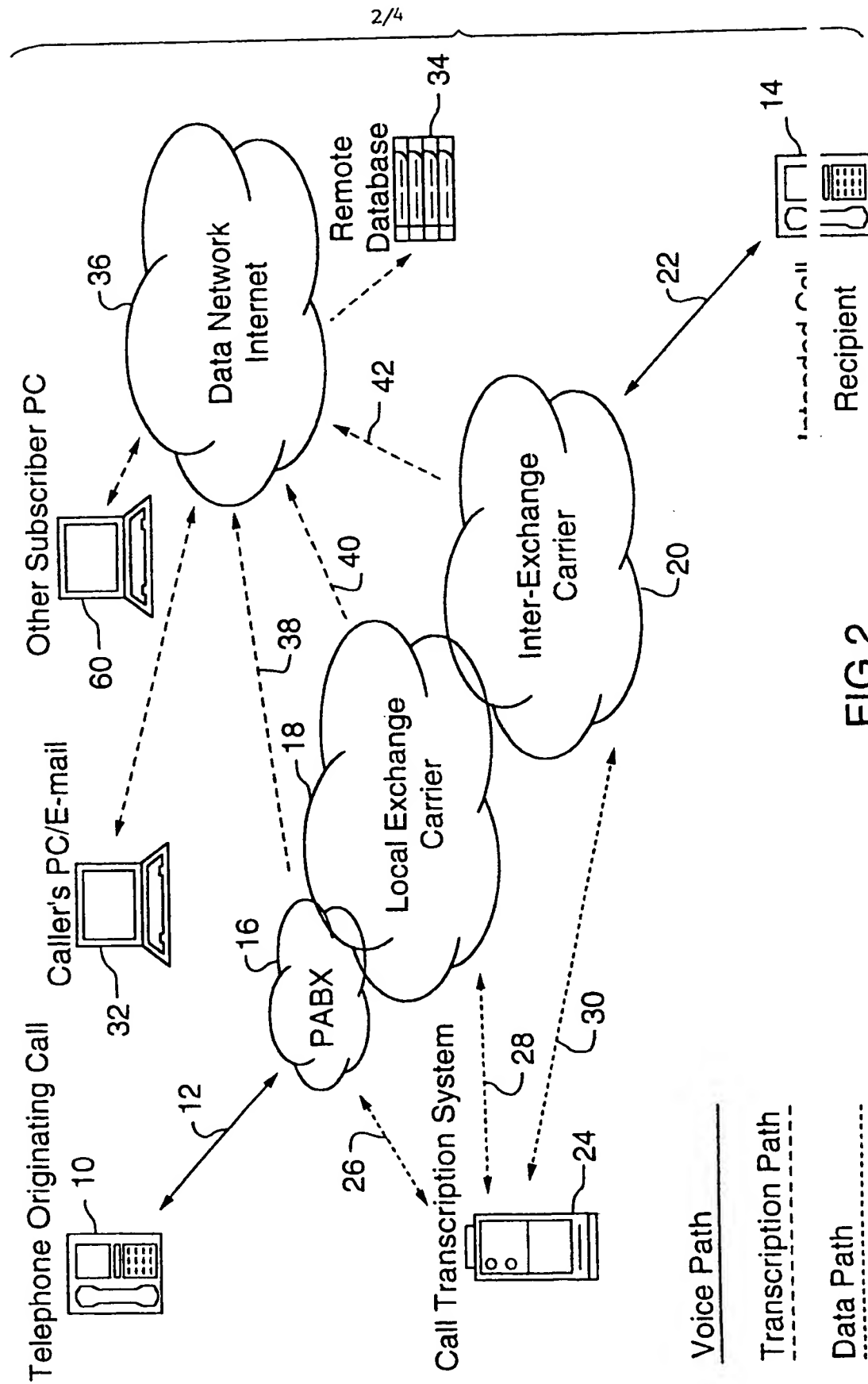


FIG.2

Subject: Transcribed Telephone Call #2741
Date: Fri, 28 Feb 1997 16:46:44
From: "Transcription Service" <trans@mondial.com>
To: Michael Reichmann" <michael.reichmann@alphanet.net>

The attached file contains a transcription of a telephone call made:

From: 416/413-4400
To: 212/555-1212
On: Fri, 28 Feb 1997 16:37:00 EDT
Duration: 3 minutes, 32 seconds
Type: .WAV
Size: 1.5 MB

This files, as requested in your profile, has also been archived for Web retrieval at <http://www.mondial.com>.

Part 1

Type: application/ms.wav
Encoding: base64

FIG.3

<http://www.mondial.com>

Call Transcription Web In-Box

User Account: Michael Reichmann
 User Account Number: 416-413-4400
 User Password: XXXXXXXXXX

Current Saved Transcriptions

Select	From	To	Date / Time	Conference	Duration	Type	Size
	416-413-4400	212/555-1212	Fri, 28 Feb 1997 16:37:00 EDT	No	3 Min, 32 Sec	.wav	1.5mb
	416/413-4400	619/234-1234 514/567-3456 212/789-4567	Mon, 3 March 1997 09:13:00 EDT	Yes	6 Min	.wav	3 mb
✓	416/365-7867	416/654-9823	Mon, 3 March 1997 13:15:30 EDT	No	2 Min	wav	1 mb

Select File(s) above

Play	Download
Delete	Forward

Account and Transcription Controls

Enter Password	Change Password	Control Call on Registered Telephone Line	Control Call on Registered Calling Card
Record Current Call	CC This Transcriptions	Forward Transcriptions to Email Account	Forward Transcriptions to Web
Add Another Party	Cancel Current Transcription	Specify Email Account(s)	Other User Set-able Parameters
Append Text Info	Append Voice Information	Append Transcription	Append Transcription

FIG.4

INTERNATIONAL SEARCH REPORT

national Application No.
PCT/CA 98/0017

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 H04M3/42 H04M7/00 H04M3/50 H04M3/36

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 H04M H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 351 276 A (DOLL JR WILLIAM J ET AL) 27 September 1994 see abstract	1 20
A	see column 7, line 56 - column 10, line 35	9 11, 26, 3 - 34
A	"RECORD A PHONE CONVERSATION AND PLACE INTO PHONEMAIL" IBM TECHNICAL DISCLOSURE BULLETIN, vol. 34, no. 7A, 1 December 1991, page 455 XP000255681 see the whole document	1 20, 26, 3
A	EP 0 675 625 A (ZUCKER JOANN) 4 October 1995 see the whole document	1 16, 20, 2, 32, 33
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☒ Further documents are listed in the continuation of box C

☒ Patent family members are listed in annex

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- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other documents, such combination being obvious to a person skilled in the art
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Date of the actual completion of the international search

1 July 1998

Date of mailing of the international search report

09/07/1998

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